

# Redesign Blowdown Systems and Alter ESD Practices



Partner Reported Opportunities (PROs)  
for Reducing Methane Emissions

## PRO Fact Sheet No. 107

### Applicable sector(s):

Production     Processing     Transmission and Distribution

**Top reporting partners:** Ten partners across all four sectors - Columbia Gulf Transmission; CrossCountry Energy; Duke Energy Gas Transmission; El Paso Field Services; PG&E National Energy Group (now Gas Transmission Northwest); Iroquois Gas Transmission System; Northern Natural Gas Company; Pioneer Natural Resources USA, Inc.; Southern California Gas Company; Williston Basin Interstate Pipeline Company

**Other related PROs:** Close Main Valves and Unit Valves Prior to Blowdown, Design Isolation Valves to Minimize Gas Blowdown Volumes, Move Fire Gates in to Reduce Venting at Compressor Station

Compressors/Engines   
Dehydrators   
Pipelines   
Pneumatics/Controls   
Tanks   
Valves   
Wells   
Other

## Technology/Practice Overview

### Description

When compressors are taken offline for maintenance or the system shuts down, the gas within the compressors and associated piping is either manually or automatically vented to the atmosphere (i.e., blowdown). Emergency shutdown (ESD) systems are designed to automatically evacuate hazardous vapors from sensitive areas during plant emergencies and shutdowns. Some ESD systems route these vapors to a flare stack where they are combusted, while other systems simply vent the evacuated vapors to the atmosphere via a vent stack.

Partners report that modifying ESD vents and blowdown piping enables collection and re-routing of the gas to the sales line, the fuel box, lower pressure mains for nonemergency use (e.g., ESD testing), or flare systems.

### Operating Requirements

Redesign of blowdown systems and altering ESD practices should be done in accordance with acceptable industry safety standards (OSHA, API, ANSI, ASME, PSM).

### Applicability

This practice applies to all compressor stations.

**Methane Savings: Less than 100 Mcf per year to 72,000 Mcf per year**

### Costs

Capital Costs (including installation)

<\$1,000     \$1,000 – \$10,000     >\$10,000

Operating and Maintenance Costs (annual)

<\$100     \$100-\$1,000     >\$1,000

### Payback (Years)

0-1     1-3     3-10     >10

### Benefits

Reducing methane emissions was a primary justification for the project.

## Methane Emissions Reductions

Rerouting combustible gases eliminates potential hazards in the operating area as well as reducing methane emissions. Emissions savings vary by compressor stations size, operating pressure, and facility complexity. Partners reported annual emissions reductions ranging from less than 100 Mcf per year to more than 72,000 Mcf per year. For one

partner, installation of a blowdown recovery system at 7 compressor stations recovered 1,155 Mcf of gas that would have otherwise been vented to the atmosphere. An additional 1,275 Mcf savings was obtained by piping connections that lowered atmospheric venting pressure to approximately 60 psi.

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## **Economic Analysis**

### **Basis for Costs and Savings**

Based on one partner's reported methane emissions reductions of 347 Mcf per year at one compressor station.

### **Discussion**

This practice can provide payback in less than three years. Gas savings from rerouting blowdown systems to a sales line or for local fuel use should justify the piping and operating costs.